

# **WATER-COOL RADIATOR MODULE**

## **BACKGROUND OF THE INVENTION**

### **5 I. Field of the Invention**

The present invention relates generally to a radiator module and, more specifically, a water-cool radiator module that is separated from heavy water tank, cold water pipe and hot water pipe that are independently fixed in a slot for the purpose to reduce the load on the heat-generating electronic components and not occupy the space of the electronic components.

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### **II. Description of the Prior Art**

Heretofore, it is known that a conventional radiator, As shown in Fig.1, generally comprises a flat pedestal 10 that comprises a plurality of radiating fins 11 and a water conduit (not shown in Fig.) on the other side; the water conduit comprises a water inlet 12 and a water outlet 13; the pedestal 10 further comprises a fan 30. In practical use, this configuration has the following disadvantages:

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1. In addition to radiating fins 11, some water conduit accessories are also located under radiating fins 11. Such mechanism not only increases the height of the radiator structure but also increases the load on the heat-generating electronic components due to increased weight of water in water conduit. As a result, this may cause damage to such electronic component and occupies larger space.

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2. Water in the water conduit stays and exchanges heat between radiating fins 11. Therefore, heat stays on radiating fins 11 resulting in very slow radiating speed.

25 3. Fan 30 is located on radiating fins 11. When fan 30 is activated, heat current will flow slowly through computer and then flow outward through the radiating holes outside the computer. As a result, heat may stay in the computer.

## SUMMARY OF THE INVENTION

It is therefore a primary object of the invention to provide a water-cool radiator module that comprises a supporting part that further comprises a shell body; the shell body comprises a fan and a water tank; the water tank is connected to a cold water pipe and a hot water pipe; the extended section of the cold water pipe and hot water pipe connects to a cold waterhead; the shell body further comprises several radiating holes at one end; in practical application, the supporting part is fixed in a slot on the computer case and the shell body is firmly fixed on the slot; cold water on heat-generating electronic component is sent to the shell body via hot the water pipe; blown by the fan, heat is radiated outward via radiating holes; and cool fluid flows from the water tank to the cold waterhead via the cold water pipe. With repeated circulation, the heat produced by electronic component is taken away quickly. On the other hand, since the water tank, the radiating fins and the fan are all fixed on slot, the heat-generating electronic component does not bear the weight of the water tank, the radiating fins and the fan. As a result, this reduces the possibility of any damage to the heat-generating electronic component and saves space above the heat-generating electronic component.

It is still an object for the invention to provide a water-cool radiator module in which a pump is installed inside the shell body to speed up the flow of hot water in the hot water pipe and control the flow direction.

It is still another object for the invention to provide a water-cool radiator module in which a fixing part is installed near the radiating holes of the supporting part, several holes are on the fixing part; in practical application, the supporting part is inserted into the slot, the fixing part is fixed firmly on the computer case to have the shell body install more stable onto the slot without swaying.

## BRIEF DESCRIPTION OF THE DRAWINGS

The accomplishment of the above-mentioned object of the present invention will

become apparent from the following description and its accompanying drawings which disclose illustrative an embodiment of the present invention, and are as follows:

FIG 1 is a perspective view of the prior art;

5 FIG 2 is a perspective view of the present invention;

FIG 3 is an assembly view of the present invention;

FIG 4 is another assembly view of the present invention;

FIG 5 is an application view of the present invention.

## 10 DESCRIPTION OF THE PREFERRED EMBODIMENT

Fig.2 shows a preferred embodiment of the water-cool radiator module in the present invention wherein the module comprises a supporting part 10, a supporting part 10 can couple with the interfaces of various types of extended slots such as AGP, PCI and ISA on one side, the supporting part 10 comprises a fixing part 20 on the other side; the fixing part 20 is perpendicular to supporting part 10 and comprises holes 21.

As shown in Fig.3, the supporting part 10 comprises a shell body 30; the shell body 30 comprises a water tank 310 which connects to a cold water pipe 32 and a hot water pipe 33 on the other side; several radiating fins 34 are aligned orderly on the bending section of the hot water pipe 33; a fan 35 is located adjacent to the radiating fins 34; an opening 37 is located at a region where the shell body 30 is not braced against the supporting part 10; the opening 37 faces the fan 35; a pump 31 is located beside the fan 35 and connected to the hot water pipe 33; the hot water pipe 33 extends outward from the pump 31 and connects to a cold waterhead 40; the cold waterhead 40 is also connected with cold water pipe 32; several radiating holes 36 are located on the side where the shell body 30 faces holes 21.

In practical use, as shown in Fig.2, Fig.3 and Fig.5, users install the cold waterhead 40 on the heat-generating electronic components (a processor in this application ), and insert the cold waterhead 40 into the slot on the computer case via the supporting part 10;

the supporting part 10 is fixed in a slot on the computer case by the fixing of the fixing part 20 on the back of computer case, the shell body 30 is firmly fixed on the slot; such that the heat conducted from electronic components to the cold waterhead 40 will raise the temperature of the fluid in the cold waterhead 40. By the driving of the pump 31, hot water flows back to the pump 31 via the hot water pipe 33 and flows through the radiating fins 34; the fan 35 draws cold air into the shell body 30 to cool water flowing through the radiating fins 34; after the heat in the water is quickly radiated through the radiating holes 36 and the holes 21, cool water flows from water tank 310 to the cold waterhead 40 via the cold water pipe 32. With repeated circulation, the heat produced by the electronic component is taken away quickly. On the other hand, since the cold waterhead 40 is separated from the water tank 310, the radiating fins 34 and the fan 35, and the water tank 310, the radiating fins 34 and the fan 35 are all fixed on slot, the heat-generating electronic component does not bear the weight of the water tank 310, the radiating fins 34 and the fan 35. As a result, such scheme reduces the possibility of any damage to the heat-generating electronic component and saves space above the heat-generating electronic component.

Fig.4 shows another application of the present invention wherein the radiator module comprises a shell body 30; a supporting part 10 is attached on both sides of the shell body 30; the supporting part 10 can be inserted into two slots; one side of the supporting part 10 comprises a fixing part 20 that is connected with the supporting part 10; the fixing part 20 is perpendicular to the supporting part 10 and comprises holes 21; the supporting part 10 further comprises a shell body 30; the shell body 30 comprises a water tank 310 which connects to a cold water pipe 32 and a hot water pipe 33; the hot water pipe 33 is in continuous bending shape and extends outward via water tank 310, several radiating fins 34 are aligned orderly on the bending section of the hot water pipe 33; a fan 35 is located beside radiating fins 34; an opening 37 is located at a region where the shell body 30 is not braced against the supporting part 10; the opening 37 faces the fan 35; a pump 31 is located beside the fan 35 and connected with the hot water pipe 33; the hot water pipe 33 extends outward via pump 31 and connects to a cold waterhead 40; the cold waterhead 40

is also connected with cold water pipe 32; several radiating holes 36 are located on the side where the shell body 30 faces holes 21.

In practical use, as shown in Fig.3, Fig.4 and Fig.5, users install the cold waterhead 40 on the heat-generating electronic component (a processor in this application), and  
5 insert the cold waterhead 40 into the slot on the computer case via the supporting part 10, the supporting part 10 is fixed in a slot on the computer case by the fixing of the fixing part 20 on the back of computer case, the shell body 30 is firmly fixed on the slot; such that the heat conducted from electronic component to cold waterhead 40 will raise the temperature of the water in the cold waterhead 40. By the driving of the pump 31, hot  
10 water flows back to the pump 31 via the hot water pipe 33 and flows through the radiating fins 34; the fan 35 draws cold air into the shell body 30 to cool water flowing through the radiating fins 34; after the heat in the water is quickly radiated through the radiating holes 36 and the holes 21, cool water flows from the water tank 310 to the cold waterhead 40 via the cold water pipe 32. With repeated circulation, the heat produced by the electronic  
15 component is taken away quickly. On the other hand, since the cold waterhead 40 is separated from the water tank 310, the radiating fins 34 and the fan 35, and the water tank 310, the radiating fins 34 and the fan 35 are all fixed on slot, the heat-generating electronic component does not bear the weight of the water tank 310, the radiating fins 34 and the fan 35. As a result, this reduces the possibility of any damage to the  
20 heat-generating electronic component and saves space above the heat-generating electronic component.

While a preferred embodiment of the invention has been shown and described in detail, it will be readily understood and appreciated that numerous omissions, changes and additions may be made without departing from the spirit and scope of the invention.